

### **REMARKS**

Claims 1-17 and 20-21 are pending in the application. Claims 18 and 19 were previously cancelled in accordance with a Restriction Requirement. Claims 20 and 21 were added. Support for the new claim 20 can be found in at least Figs. 1-2 and page 10, lines 1-21 of the original specification. Support for the new claim 21 can be found in at least Figs. 7-8 and page 17, lines 14-32 to page 18, lines 1-14 of the original specification. Therefore, no new matter is added.

### **Request for Interview Prior to Formal Action on Amendment**

Applicants request an interview prior to formal action on this response. An "Applicant Initiated Interview Request Form" accompanies this response. Please contact Applicants' undersigned representative to schedule the interview.

### **Prior Art Rejections**

I. Claims 1-17 were rejected under 35 U.S.C. §102(b) as being anticipated by United States Patent No. 6,096,048 (Howard *et al.*, hereinafter "Howard"). Applicants respectfully traverse these rejections.

#### **1. Patentability of independent claims 1, 6 and 14 over Howard**

Claim 1 reads, *inter alia*, as follows (underling added for emphasis):

a marker attachment device disposed at a distal end of the  
second arm of the open-ended frame, the marker  
attachment device having a plurality of marker attachment  
points that receive fiducial markers, at least two of the  
marker attachment points of the marker attachment device  
being configured to receive fiducial markers in different

orientations with respect to the marker attachment device  
and each other

Claim 6 reads, *inter alia*, as follows (underlining added for emphasis):

an open-ended frame having first and second arms, the  
open-ended frame being configured to be removably  
attached to the maxillary holding device, the first arm having  
at least one marker attachment point that receives fiducial  
markers and the second arm having a plurality of marker  
attachment points that receive fiducial markers, at least two  
of the marker attachment points of the second arm being  
configured to receive fiducial markers in different  
orientations with respect to the open-ended frame and each  
other

Claim 14 reads, *inter alia*, as follows (underlining added for emphasis):

an open-ended frame having first and second arms, the  
open-ended frame being configured to be removably  
attached to the maxillary holding device, the first arm having  
at least one marker attachment point that receives fiducial  
markers and the second arm having a plurality of marker  
attachment points that receive fiducial markers, at least two  
of the marker attachment points of the second arm being  
configured to receive fiducial markers in different  
orientations with respect to the open-ended frame and each  
other

On pages 2 and 3 of the outstanding Office Action, the Examiner states that is inherent that two of the maker attachment points are configured to receive fiducial markers 31 in different orientations. The Examiner states an example in which one marker attachment point is inherently configured to receive a fiducial marker 31 in the orientation shown in the Figures (of Howard) while another attachment point is inherently configured to receive a fiducial marker 31 in the opposite orientation (by being screwed into attachment point 45 in the opposite direction).

Applicants traverse the Examiner's interpretation of Howard. According to MPEP §2112 (italicized emphasis added):

To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is *necessarily present* in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.

'In relying upon the theory of inherency, the examiner *must provide a basis in fact and/or technical reasoning* to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.'

The Examiner has offered no extrinsic evidence that Howard inherently discloses that marker 31 (or 21) is capable of being screwed into the attachment point 45 (or 19) in the opposite direction. Further, the Examiner has not provided a basis in fact and/or technical reasoning to support the contention that the marker 31 (or 21) is capable of being screwed into the attachment point 45 (or 19) in the opposite direction. The Examiner merely asserts that the attachment is inherently configured to receive a fiducial marker 31 in an opposite orientation in complete contradistinction to the teachings of Howard which only shows marks in the other surface (facing away from the patient). It is well known in the art that screw threads are typically configured to allow for threaded connection in a specific direction and are not necessarily bidirectional. To

accomplish what the Examiner states is inherent in Howard would require the threaded socket of the attachment point 45 (or 19) and/or the threads of the marker 31 (or 21) to be configured in a bidirectional manner not explicitly described or even suggested by Howard. Further, such a configuration is not necessarily present in Howard nor does such a teaching necessarily flow from Howard. Therefore, Howard does not disclose or suggest at least two of the marker attachment points of the second arm being configured to receive fiducial markers in different orientations with respect to the open-ended frame and each other.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the §102(b) rejections of claims 1, 6 and 14.

2. Patentability of independent claim 14 over Howard

Claim 14 reads, *inter alia*, as follows (underlining added for emphasis):

a reference emitter configured to be removably attached to  
the maxillary holding device or the open-ended frame.

The Examiner did not address the highlighted claim limitation in the outstanding Office Action. Further, Howard does not disclose or suggest a reference emitter configured to be removably attached to the maxillary holding device or the open-ended frame.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the § 102(b) rejection of claim 14.

3. Patentability of dependent claims 2-5, 7-13, 15-17, 20 and 21 over Howard

The dependent claims 2-5, 7-13, 15-17, 20 and 21 are believed to be patentable over Howard for at least the reason that they depend from patentable base claims and recite further patentable elements. Accordingly, Applicants respectfully request that the Examiner reconsider

and withdraw the § 102(b) rejections of claims 2-5, 7-13 and 15-17 and allow new claims 20 and 21 over Howard.

**II.** Claims 1-17 were rejected under 35 U.S.C. § 103(a) as obvious over United States Patent No. 6,096,048 (Howard *et al.*, hereinafter “Howard”). Applicants respectfully traverse these rejections.

1. Patentability of independent claims 1, 6 and 14 over Howard

Claim 1 reads, *inter alia*, as follows (underling added for emphasis):

a marker attachment device disposed at a distal end of the second arm of the open-ended frame, the marker attachment device having a plurality of marker attachment points that receive fiducial markers, at least two of the marker attachment points of the marker attachment device being configured to receive fiducial markers in different orientations with respect to the marker attachment device and each other

Claim 6 reads, *inter alia*, as follows (underlining added for emphasis):

an open-ended frame having first and second arms, the open-ended frame being configured to be removably attached to the maxillary holding device, the first arm having at least one marker attachment point that receives fiducial markers and the second arm having a plurality of marker attachment points that receive fiducial markers, at least two of the marker attachment points of the second arm being

configured to receive fiducial markers in different  
orientations with respect to the open-ended frame and each  
other

Claim 14 reads, *inter alia*, as follows (underlining added for emphasis):

an open-ended frame having first and second arms, the  
open-ended frame being configured to be removably  
attached to the maxillary holding device, the first arm having  
at least one marker attachment point that receives fiducial  
markers and the second arm having a plurality of marker  
attachment points that receive fiducial markers, at least two  
of the marker attachment points of the second arm being  
configured to receive fiducial markers in different  
orientations with respect to the open-ended frame and each  
other

On page 3 of the outstanding Office Action, the Examiner states that it would have been obvious that another marker attachment point is inherently configured to receive fiducial marker 31 in the opposite orientation for the reasons stated above regarding the § 102(b) rejection.

Applicants traverse the Examiner's interpretation of Howard. The Examiner states that "another marker attachment point is inherently configured to receive a fiducial marker 31 in the opposite orientation (by being screwed into attachment point 45 in the opposite direction)". However, Howard does not disclose or suggest that the fiducial marker device 31 (or device 21) is screwed into the attachment point 45 (or 19) from the other side (inside) of the second arm (or first arm) and thus pointing in the incorrect direction regarding the patient's head. See Figure 1 of Howard. In fact, Howard "teaches away" from such a configuration since:

- a) The radiation source 29 of marker 21 would not be exposed to the external

medical apparatus that is targeting the marker 21 if the marker 21 were screwed into the attachment point 45 (or 19) as the Examiner suggests is inherently obvious; and

b) The eyepiece side 39 of marker 31 would not be exposed to the eye 41 that needs to look through marker 31 if the marker 31 were screwed into the attachment point 45 (or 19) as the Examiner suggests is inherently obvious.

Therefore, Howard does not make obvious at least two of the marker attachment points of the second arm being configured to receive fiducial markers in different orientations with respect to the open-ended frame and each other.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the § 103(a) rejection of claims 1, 6 and 14.

2. Patentability of dependent claims 2-5, 7-13, 15-17, 20 and 21 over Howard

The dependent claims 2-5, 7-13, 15-17, 20 and 21 are believed to be patentable over Howard for at least the reason that they depend from patentable base claims and recite further patentable elements. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the § 103(a) rejections of claims 2-5, 7-13 and 15-17 and allow new claims 20 and 21 over Howard.

**Conclusion**

Insofar as the Examiner's rejections were fully addressed, the instant application is in condition for allowance. Issuance of a Notice of Allowability of all pending claims is therefore earnestly solicited.

Application No. 10/526,754  
Reply to Office Action of October 18, 2007

Respectfully submitted,

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December 19, 2007  
(Date)

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